

# 國際海洋資訊

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## 我國海洋新世紀—— 〈海洋基本法〉的開啓與發展

New Century of the Ocean ——  
Commencement and Development  
of the Ocean Basic Act



海洋委員會  
Ocean Affairs Council

發行





## Taiwan Poised to Face New Oceanic Challenges

Translated by Linguitronics

Keywords: Ocean, Basic Ocean Law, International Maritime Organization

Minister of the Ocean Affairs Council: Chung-Wei Lee

On November 1, 2019, the Legislative Yuan passed the third reading of the Basic Ocean Law, which is the supreme regulation for integrating domestic marine affairs and declaring the overall domestic marine policy. In this special report, Chien-Chung Shen (Director of Department of Planning of the Ocean Affairs Council) provides an analysis which rolls out an extensive blueprint for Taiwan's marine policies and regulations based on the legislative focuses prescribed in the drafts of the Basic Ocean Law, Ocean Conservation Act, Sea Area Administration Act, and Marine Industry Development Act, as well as the planning of the National Ocean Policy White Paper.

Balancing industrial development with ocean sustainability is a necessary issue that the whole world must face. To this end, this issue provides a report that particularly focuses on the International Maritime Organization (IMO) and related organizations. In Latest News, the IMO's Global Integrated Shipping Information System (GISIS) is introduced. GISIS collects information from member states and provides the information to maritime administrative units for inspection, which offers the means for the operation of a module related to pollution prevention and maritime safety; in October 2019, the IMO and the Spanish government organized the Ministerial Conference on Fishing Safety and Illegal, Unreported and Unregulated (IUU) Fishing where the Torremolinos Declaration was signed; in the same month, the IMO and the World Meteorological Organization (WMO) jointly held the International Symposium on Extreme Maritime Weather: Towards Safety of Life at Sea and Sustainable Blue Economy to discuss the sustainable development of the blue economy in the context of extreme climate conditions. From January 1, 2020, the global sulfur limit of the IMO came into effect immediately. The sulfur limit originates from Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), which restricts ships to use fossil fuel with sulfur content less than 0.5%. This is not only a collective consensus of the IMO which guides on the issues of ship safety, security, and environmental protection in the maritime industry, but also a demonstration of the world's determination for marine sustainability.



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## New Century of the Ocean — Commencement and Development of the Ocean Basic Act

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Translated by Linguitronics

Keywords: Ocean Basic Act, National Ocean Policy White Paper (First Draft), Ocean Conservation Act (Draft), Sea Area Administration Act (Draft), and Marine Industry Development Act (Draft)

The Ocean Basic Act clarifies Taiwan's national ocean policy and offers superior integration and regulations over the marine regime, marine affairs, marine rights, marine safety, sustainability of the marine environment, marine industry, marine culture, marine education, and marine scientific research, among others.



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<https://pixabay.com/photos/container-container-ship-port-1611490/>

### Introduction

Taiwan has an abundance of marine resources and is located at a place of strategic importance to international sea transportation. The preamble of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) states: The States Parties to this Convention “recognize the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.” The government of the R.O.C. is promoting and improving the domestic law of the sea and defending the nation's marine rights on the basis of rights set forth in the UNCLOS, in order to provide citizens with a safe marine environment, conserve marine resources, develop a forward-looking and prosperous marine industry, improve marine education and culture, develop marine science and technology, and thereby develop a strong ocean nation.



The Ocean Affairs Council is responsible for the marine affairs, laws, and policies of the R.O.C. Hence, it has directed its efforts into the legislation of ocean related laws, which cover marine safety, ocean resources conservation, marine industry development, marine talent cultivation, marine science and technology development, and expansion of Taiwan's marine diplomacy. In order to integrate the actual planning of ocean policy and legal practices, the Ocean Affairs Council, together with departments of the Executive Yuan and local governments, established the Ocean Basic Act, which serves as the highest guiding principle for the ocean policy of the R.O.C. The law was enacted after taking into consideration domestic and overseas oceanic developments, opinions of the Legislative Yuan and public discourse, and the opinions of the private sector and academia gathered through public-private partnerships.

## Ocean Basic Act

The Executive Yuan established the Ocean Affairs Council on April 28, 2018, in order to integrate the planning, coordination, and promotion of related marine policies and also to take charge of marine and coastal guarding and marine conservation and research. Therefore, the Ocean Affairs Council is responsible for the integrated planning, deliberation, coordination, and promotion of overall ocean policies and basic laws and regulations. After its establishment, the Council formulated the Ocean Basic Act (Draft), which integrated domestic ocean related laws, policies, and marine affairs.

Establishment of the Ocean Basic Act (Draft) is the government's declaration of its overall ocean policy and means for integrating ocean affairs. After inviting government agencies at each level as well as scholars and experts to discuss the Ocean Basic Act (Draft), the Ocean Affairs Council submitted the draft of the Ocean Basic Act to the Executive Yuan on September 12, 2018, for review. The Executive Yuan called for three cross-ministerial review meetings, which took place on November 22 of the same year, March 19, 2019, and March 27, 2019. The draft was approved during the 3648<sup>th</sup> meeting of the Executive Yuan on April 25 and was sent to the Legislative Yuan, where it passed third reading on November 1. The Law consists of 19 articles in total. It was submitted on November 20 to the President, who mandated the promulgation.

After the Ocean Basic Act was approved, the Ocean Affairs Council issued an official letter to departments of the Executive Yuan and local governments on applicable laws and regulations regarding the ocean that would be revised, abolished, or prepared (formulated). In response to World Ocean Day, the law specifies that June 8 shall be National Ocean Day, which was designated in hopes of raising awareness among government and all parts of society. The National Ocean Policy White Paper is required to be announced within one year after the law takes effect. The Ocean Affairs Council thus compiled the National Ocean Policy White Paper (First Draft), and formulated the Ocean Conservation Act (Draft), Sea Area Administration Act (Draft), and Marine Industry Development Act (Draft) for the enforcement of the Ocean Basic Act, in hope of developing Taiwan into an ocean nation with ecological sustainability, marine safety, and flourishing industries.

Highlights of the legislation of the Ocean Basic Act are:

- I. To introduce basic ocean development rules, including environmental friendliness, sustainable development, reasonable and effective utilization of resources, and international exchange and collaboration.
- II. To centralize and integrate the responsibilities of respective competent authorities regarding the ocean, enact laws and regulations on the spatial planning of the ocean, and coordinate marine use and co-opetition.



- III. To take part in regional and international cooperation in honor of the principles of being peaceful, reciprocal, and protective of our national ocean rights and beliefs.
- IV. To define marine pollution prevention and control solutions in order to strengthen the momentum in preventing pollution, promote marine restoration, and protect the marine environment.
- V. To combine taxation and financial systems and formulate policy ensuring robust development of the marine industry, helping develop domestic talent and the industrial chain. To respect, maintain, conserve the marine heritage, and reinforce public awareness, kindness, and love of the ocean.
- VI. To include important knowledge about the ocean as part of the national basic education and training program for public officials in promoting universal marine education.
- VII. The government shall plan marine protected areas with an approach based on ecology and be devoted to restoring the marine ecology and related natural links as well as protecting the rights and interests of original marine users.
- VIII. Budget to support ocean affairs shall be extensively appropriated, and educational institutions, the marine industry, non-governmental organizations and individuals shall be subsidized and recognized. The central government may also set up the Ocean Development Fund.
- IX. The National Ocean Policy White Paper is to be released within a year following implementation of the Ocean Basic Act. Governments at all levels shall cooperate by discussing the policies and administrative measures within their jurisdiction.
- X. June 8 is made National Ocean Day.

In order to enforce an ecological, safe, and prosperous ocean policy under the Ocean Basic Act, the Ocean Affairs Council stipulated, respectively, the National Ocean Policy White Paper (First Draft), Ocean Conservation Act (Draft), Sea Area Administration Act (Draft), and Marine Industry Development Act (Draft). They are described as follows:

### National Ocean Policy White Paper (First Draft)

The government enacted the Ocean Basic Act, which serves as the basis for formulating national ocean policies, to drive overall marine development, and also compiled the National Ocean Policy White Paper (First Draft) to urge governments at all levels to review their policies and administrative measures, and also strengthen performance in marine affairs management. The Ocean Affairs Council thus invited related ministries and departments of the Executive Yuan, experts, and scholars on ocean affairs to jointly compile the National Ocean Policy White Paper (First Draft), which, while upholding the legislative intent of the Ocean Basic Act, outlines substantial strategies and measures on national ocean development, so that governments at all levels may follow and act accordingly.

### Ocean Conservation Act (Draft)

The Ocean Conservation Act (Draft) is prepared for the sake of maximizing the conservation available for marine creatures, strengthening regulations, and integrating related efforts on marine protected areas and to effectively enforce the conservation and restoration of marine biodiversity, protect the marine environment, promote integrated planning and implementation of marine protected areas, and respect the traditional culture of indigenous peoples, thereby creating a healthy marine environment and contributing to sustainable resources. (Website of the Ocean Affairs Council, Ocean Conservation Act (Draft), December 3, 2019. Retrieved from <https://reurl.cc/k5jj4q>, Dec. 30, 2019).



### Sea Area Administration Act (Draft)

The Sea Area Administration Act (Draft) is prepared For the purposes of protecting Taiwan's ocean rights, ocean affairs, and marine safety, establishing a Marine Spatial Planning (MSP) system, building a sea area awareness system, and maintaining marine order; it is prepared with reference to international development trends and legislation in advanced countries, and it upholds the legislative intent of the Ocean Basic Act. (Website of the Ocean Affairs Council, Sea Area Administration Act (Draft), November 29, 2019. Retrieved from <https://reurl.cc/YlrrM4>, Dec. 30, 2019).

### Marine Industry Development Act (Draft)

In developing an ocean nation with ecological sustainability, marine safety, and flourishing industries, a flourishing marine industry is indispensable. The marine industry is complex and closely related to the daily life of citizens. The Marine Industry Development Act (Draft) was formulated to create an excellent environment for the development of the marine industry, as well as to also achieve environmental sustainability. (Website of the Ocean Affairs Council, Marine Industry Development Act (Draft), July 8, 2019. Retrieved from <https://reurl.cc/gvjgjp>, Dec. 30, 2019).

### Conclusion

Taiwan is surrounded by ocean, and marine development boosts national power. Facing the challenges of a new oceanic era, Taiwan must establish ocean related laws to protect ocean rights, implement laws, policies, and operations, and invest resources to become closer to the ocean, develop the ocean, and gain marine capabilities. We hope to thereby open up a new ocean era with ecological sustainability, marine safety, and flourishing industries.



Guishan Island at dawn (Photograph by Chien-Pang Lin)

Image by Northeast and Yilan Coast National Scenic Area Administration, Tourism Bureau,  
Ministry of Transportation and Communications



## Torremolinos Declaration: Calling on States to accede to the Cape Town Agreement

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Keywords: Torremolinos Declaration, Cape Town Agreement, fishing vessel safety, illegal fishing

Ministerial Conference on Fishing Safety and Illegal, Unreported and Unregulated (IUU) Fishing was held on 12-23 October in Torremolinos, Spain. The main objective of the conference is to promote accession to or ratification of the Cape Town Agreement by States. The Cape Town Agreement was adopted in 2012 by the International Maritime Organization (IMO), a key IMO treaty for safety of fishing vessels. The entry into force of the Cape Town Agreement will help enhance safety of fishing vessels, thereby saving fishermen's lives, as well as deter the proliferation of illegal, unregulated and unreported (IUU) fishing by establishing international safety standards for fishing vessels.



The signing of the Torremolinos Declaration  
Image by IMO

### Torremolinos Declaration

The Ministerial Conference was co-hosted by IMO and the Government of Spain, with the kind support of the Food and Agriculture Organization of the United Nations (FAO) and The Pew Charitable Trusts. During this three-day conference, the major outcome is the adoption of the Torremolinos Declaration. 48 States signed the Declaration, publicly indicating their determination to ensure 2012 Cape Town Agreement on fishing vessel safety will enter into force by the tenth anniversary of its adoption (11 October 2022). The full name of the Cape Town Agreement is 'Cape Town Agreement of 2012 on the Implementation of the Provisions of the 1993 Protocol relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977.



A total of 9 major points were laid out in the Declaration:

- I. Encourages States that have not yet signed the Torremolinos Declaration to consider doing so during the period that it is open for signature;
- II. Calls upon States that have not yet become parties to the Agreement to consider doing so by the tenth anniversary of its adoption (11 October 2022);
- III. Urges States Parties to the Agreement to implement it, recognizing that the effectiveness of the Agreement depends upon the widespread support of States, in their capacities as flag, port and coastal States;
- IV. Strongly urges States to take actions to prevent, deter and eliminate IUU fishing, consistent with their respective obligations under international law, and recognizing that entry into force of the Agreement can empower Parties to carry out inspections and surveys of fishing vessels, thereby enhancing the transparency of fishing activities;
- V. Encourages States to ratify, promote and implement the 1995 STCW-F Convention, which sets the standards of training, certification and watchkeeping of personnel employed on board fishing vessels, and which forms a significant component of IMO's regulatory framework for the safety of fishing vessel personnel and fishing vessels;
- VI. Calls upon IMO, FAO and ILO to continue to work together to achieve rapid worldwide implementation of international agreements on issues relating to work in the fishing sector, protection of fishing vessel personnel, improvement of fishing vessel safety and elimination of IUU fishing, combating forced labour in fishing and related industries; and States, through ministries, agencies and departments at the national level, to coordinate their actions to address these issues;
- VII. Encourages IMO and other relevant international organizations and States with technical expertise on matters relating to fishing vessel safety and IUU fishing to provide technical assistance on the said matters to States that are seeking such assistance;
- VIII. Invites States that experience difficulties in the process of becoming parties to the Agreement to inform IMO of the circumstances hereof, so that consideration can be given to taking appropriate action in this request, including providing necessary technical assistance;
- IX. Requests IMO to consider:
  - [I] continuing to provide States, particularly developing States, with the assistance they may need in acceding to and implementing the Agreement;
  - [II] developing related technical assistance tools, for example on matters concerning fishing working conditions, fishing vessel construction, training of fishing vessel personnel, monitoring, control and surveillance, operations and seaworthiness standards for fishing vessels, protection of the environment, combating IUU fishing, and measures against the fraudulent registration of vessels engaged in IUU fishing.

The 48 States that have signed the Declaration are presented below.

Argentina, Bangladesh, Belgium, Belize, Central African Republic, Chile, China, Republic of Congo, Cook Islands, Costa Rica, Croatia, Dem. Rep. of the Congo, Denmark, Ecuador, Fiji, Finland, France, Gabon, Germany, Ghana, Republic of Guinea, Guinea-Bissau, Iceland, Indonesia, Ireland, Kiribati, Liberia, Lebanon, Marshall Islands, Mozambique, Namibia, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Panama, Papua New Guinea, Peru, Republic of Korea, Sao Tome & Principe, Sierra Leone, South Africa, Spain, Togo, Uganda, United Kingdom, Vanuatu.



## Regulatory framework of fishing vessel safety and personnel training

As previously mentioned, the Declaration is aimed to promote accession to the Cape Town Agreement. This Agreement, together with the STCW-F Convention, the Work in Fishing Convention, and Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, constitutes the major component of the regulatory framework devoted to fishing vessel safety, environmental protection and training of fishing vessel personnel. These four international instruments serve as four major pillars of the regulatory framework, which are briefly introduced below.

### **I. The STCW-F Convention**

IMO adopted the STCW-F Convention. It came into force on 29 November 2012. The main objective is to ensure the competence of fishing vessel personnel when they are on duty. It sets out rules and standards on the lecture content for the training of fishing vessel personnel, the ways of training, and the auditing and certification of competence.

### **II. The Work in Fishing Convention (No. 188)**

ILO adopted the Work in Fishing Convention (No. 188). It came into force on 16 November 2017. It aims to ensure decent working and living conditions for personnel working the fishing sector. It sets out requirements to address the main issues concerning work on board fishing vessels, including occupational safety and health and medical care at sea and shore, rest periods, written work agreements, and social security protection at the same level as other workers. The Convention helps prevent unacceptable forms of work for all fishers, especially migrant fishers. It also provides for regulation for the recruitment process and investigation of complaints by fishers, thereby preventing forced labour, trafficking and abuses.

### **III. The Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA)**

FAO adopted the PSMA, which came into force on 6 June 2016. The PSMA aims to deter fish caught from IUU fishing from reaching national and international markets, thereby reducing the incentive for perpetrators to continue to engage in IUU fishing. This Agreement sets out rules and standards on the detection and investigation of IUU fishing, as well as the follow-up actions, reporting and notification of IUU fishing incidents.

### **IV. The Cape Town Agreement**

IMO adopted the Cape Town Agreement on 11 October 2012. It does not yet enter into force. It will enter into force once 22 States with a combined 3,600 eligible fishing vessels ratify or accede. The eligible fishing vessels refer to those operating on the high seas and of 24 meters in length and above. As of November 2019, a total of 12 States ratified or acceded to the Agreement, which are: Republic of Congo, Denmark, Germany, Ireland, Netherlands, Norway, South Africa, France, Belgium, Spain, Cook Islands, Sao Tome & Principe. This Agreement aims to ensure fishing vessel safety. It set out rules and standards on fishing vessel design, construction and equipment (e.g., lifesaving appliances, radio installations) as well as include other regulations designed to protect the safety of crews and observers.





Ministerial Conference  
Image by IMO



The Cape Town Agreement applying to the fishing vessels operating on the high seas and of 24 meter in length and above  
Image by Chung-Ling Chen



## Conclusion

For a long time, the international organizations have exempted fishing vessels from being subject to the regulations regarding the maritime activities, leaving a gap in terms of regulating the matters on fishing vessel safety, working and living conditions on fishing vessels, and training of fishers. As with the rising awareness of the fishing vessel safety, illegal fishing and fishers' rights and working conditions in the international arena, IMO, FAO and ILO have launched to make relevant regulations in the fishing sector. The four international instruments, the STCW-F Convention, the Work in Fishing Convention, the PSMA and the Cape Town Agreement, have been therefore made to deal with the said matters. The former three ones already came into force. However, the last one has not yet come into force. The Torremolinos Declaration adopted by the Ministerial Conference in 2019 is exactly the statement to push for accession to or ratification of the Agreement such that the Agreement get to enter into force as soon as possible.



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# A Review on the Impact of Extreme Weather on the Ocean from the Perspective of the International Symposium on Extreme Maritime Weather

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Translated by Linguitronics

Keywords: IMO, WMO, COP25, Extreme Weather, Sustainable Development, Blue Economy

Marine industries and services have provided key foundations for the sustainable development of the global economy, with the output value of marine transportation accounting for 70% of world trade. However, due to the volatility of the climate, marine transportation accidents may not only endanger life and commodities during shipping, but also cause marine environmental disasters. The International Maritime Organization (IMO) and the World Meteorological Organization (WMO) jointly held the 1st International Symposium on Extreme Maritime Weather in London, UK, on October 23-25, 2019, in which dialogues regarding the above key issues were conducted in an attempt to improve responsiveness and resilience at sea.



"Extreme Maritime Weather: Towards Safety of Life at Sea and Sustainable Blue Economy" Conference

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<https://www.flickr.com/photos/worldmeteorologicalorganization/49048860186/>





International Symposium on Extreme Maritime Weather

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<https://www.flickr.com/photos/imo-un/48956656563>

Marine industries and services have provided key foundations for the sustainable development of the global economy. According to statistics from the United Nations, the output value of marine industry/blue economy services is estimated to be between 3 and 6 trillion USD, with the output value of marine transportation accounting for 70% of world trade (IUMI, 2017 and UNCTAD, 2019). However, due to the volatility of the climate, marine transportation accidents may not only endanger life and commodities in shipping, but also cause marine environmental disasters such as oil tanker leaks.

To avoid disasters like the sinking of the RMS Titanic in 1912, the International Maritime Organization (IMO) formulated the International Convention for the Safety of Life at Sea (SOLAS), whose purpose was to ensure safety standards for life and ships at sea. On the other hand, the World Meteorological Organization (WMO) provides members with up-to-date information related to ocean maritime safety on a daily basis to assist sea vessels in decision-making. The WMO is an authoritative agency for national marine hydrometeorological safety information and services that provides information related to the National Meteorological and Hydrological Services (NMHS). Weather forecasts and hazardous weather warnings are therefore distributed by NMHS through the Worldwide Met-Ocean Information and Warning Service of WMO/IMO.

Over the past few decades, the accuracy and timeliness of weather forecasting have continued to improve, but due to the impact of extreme weather conditions, accidents and disasters at sea still happen frequently every year all around the world; it is estimated that millions of USD in goods and thousands of lives are still lost at sea each year. The reason is that in the marine environment, vessels of any size are exposed to various risk factors, such as strong winds, big waves, thick fog, thunderstorms, sea ice, or volcanic ash, making maritime transportation a high-risk industry.

### International call: Improve the forecasting and early warning mechanisms for extreme maritime weather

According to data submitted by the WMO to the Intergovernmental Panel on Climate Change (IPCC) at COP25, which was held in Madrid, Spain, on December 2-13, 2019, the GHG concentration in the atmosphere had hit a new high, with a record reaching 407.8 ppm in 2018. Among all the gases, carbon dioxide is produced from the burning of fossil fuels and therefore becomes the main cause of the greenhouse effect. If this trend continues, future generations will face severe climate change and impact, including rising global temperatures, acceleratingly extreme climates, water shortages, rising sea levels, and severe disruptions in marine and terrestrial ecosystems.



COP25 in 2019 will continue to promote the outcomes of the Paris Agreement adopted in 2015, by which it is hoped that the average global temperature in this century will increase by significantly lower than 2°C, the benchmark set prior to the Industrial Revolution, and meanwhile strive to limit temperature increase to within 1.5°C. The IPCC also indicated in its special report on the 1.5°C increase of global temperature that this goal is theoretically feasible, but requires people around the world to change their current lifestyles, and that this goal will also have unprecedented impacts on the energy use and transportation systems of today.

Major countries and relevant international agencies are calling for action to improve the forecasting and early warning mechanisms for extreme marine weather. Early warnings for extreme marine weather events can enhance maritime safety and maintain the value of the blue economy. For example, sharing and exchange of hydrological and meteorological information between ships and countries can enable crews and other stakeholders to improve their decision-making and allow ships to traverse the oceans even in hazardous conditions. Therefore, the WMO and IMO jointly held the first International Symposium on “Extreme Maritime Weather: Towards Safety of Life at Sea and Sustainable Blue Economy” in London, UK, during October 23-25, 2019 in which dialogues regarding the above key topics will be conducted in a bid to improve responsiveness and resilience at sea.

### The 1st International Symposium on Extreme Maritime Weather

There are 14 planned sessions included in the conference program. The key points of the topics are briefed below:

The first session mainly introduced the tasks of the IMO and WMO, such as IMO's descriptions and guidelines related to the International Convention for the Safety of Life at Sea, and introduced the relevant meteorological services and other early warning mechanisms provided by the WMO. The second session was a case study on extreme maritime weather, explaining how the United States, Indonesia, China, and other countries have responded to extreme climate. This included relevant approaches used by ships in response to tropical cyclones and the approaches adopted by these countries in monitoring risks arising from extreme climate. The third session was about the practices of insurance and claims incurred due to extreme climate. It introduced insurance companies' risk assessments in response to extreme climate and insurance plans that should be made in the face of ship sinking or climate risks, including the mechanisms to determine insurance costs and claims. The fourth session was the issue of extreme maritime weather stakeholders (ports or ships). For example, with respect to responsiveness of ports, it was recommended that with the increasing likelihood of extreme weather, relevant risk assessment plans as well as an early-warning mechanism should be implemented. Determination is the most important factor. The budget must be actually formulated with a practical mechanism adopted to create a resilient infrastructure and operating model. The fifth session was the issue of Voluntary Observation Ships. In addition to introducing current developments, opportunities and challenges related to the inclusion of a formal Global Ocean Observing System (GOOS) were also evaluated.

The sixth session was about the collection of marine and meteorological data and the improvement of marine weather forecasting. Marine weather forecasting is the core of the operation and management of marine affairs, and it has a profound impact on the services and weather monitoring performed by ports (such as the Port of Barcelona). The seventh session introduced the advanced weather forecasting system, which is a modularized decision support system whose functions were demonstrated at the conference. The eighth session was an introduction to the digitalized marine safety information



system, including issues related to integrating digital navigation with meteorological information. This system can therefore monitor sea ice, wind and waves, and dangerous weather conditions to provide reference information for traversing vessels. The ninth session was about the weather of the Polar regions and discussing the use of relevant decision support system services, including relevant regulations, the operation and management of navigation and meteorological services, among which was the information produced from monitoring large-scope of ice layers and sea ice. The tenth session was the study of the optimization of voyage routing for marine navigation. It discussed issues and challenges to be faced in the planning of navigation routes. Meanwhile, this theme addressed the use of the information sharing mechanism to achieve the optimal navigation routes in the management of marine transportation.

The eleventh session was the decision support system for the navigation of passenger ships. It introduced the different risk factors faced in the transportation of passenger ships and the role weather plays in the application of decision support in the navigation of passenger ships. The twelfth session was the decision support system used in the offshore industry, which mainly introduced the energy industry, such as the relationship between the production and exploration activities of the oil and gas industry and extreme climate. Next, it argued that the current development of the offshore wind industry also needed information services performed based on different weather conditions to support the operational planning and design management of the industry. The thirteenth session introduced marine safety and other concerns, such as hull design based on ocean wave information, and the use of machine learning theory from railway systems in marine management or applications. The fourteenth session was relevant to marine rescue and search. The plane crash in Indonesia was used as an example to explain the relationship between marine rescue and search services and national meteorological services. Responses to emerging marine environmental issues as well as discussions about responsive mechanism were also given.

Briefings and videos of the various sessions above can be found at the following website:  
[https://www.jcomm.info/index.php?option=com\\_oe&task=viewEventDocs&eventID=2455](https://www.jcomm.info/index.php?option=com_oe&task=viewEventDocs&eventID=2455)

## Conclusion

The sessions discussed in this conference had a broad scope. Comprehensive discussions of these sessions arrived at the following main outcomes:

- I. There were discussions about how the relevant marine organizations and associations can work together to optimize and improve the value chain which ranges from marine observations to forecasts, products, and services; this may reduce the risks posed by severe weather to ships and marine property.
- II. There were also discussions about how the above information services can be delivered to end users (ships) for the purpose of decision-making, such as the planning of international trans-ocean routes in industries related to engineering and manufacturing, shipping, freight, and passenger transportation, and emergency responses for the prevention of weather and environmental issues.
- III. In order to promote sustainable development, the Sustainable Development Goals (SDGs) of the United Nations were explored along with the Sendai Framework for Disaster Risk Reduction (2012), which aims to provide relevant assistance to countries around the world as well as the future development direction of scientific marine research of the United Nations.



# Introduction to the International Maritime Organization and Related Maritime Agencies

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Translated by Linguitronics

Keywords: International Maritime Organization, current issues, prevention against pollution from ships

The International Maritime Organization is a body under the United Nations that specializes in maritime operational safety around the world and prepares regulation and legislation governing issues of environmental protection deriving from ships.



International Maritime Organization  
<http://www.imo.org/en/About/Pages/Default.aspx/>

## Introduction

The International Maritime Organization (IMO) primarily addresses issues such as safety of ships, security, and environmental protection in the maritime community and provides ocean carriers around the world with guidelines to be followed under global standards. It mainly works to stipulate regulations for the maritime community with the hope to have them universally adopted as part of the global practice and precisely enforced under the two requirements of fair competition and operational efficiency. The IMO encourages the global maritime community to make progress in the midst of constant innovation and pursuit of efficient developments and, furthermore, to also enable ship owners to find the equilibrium for fair competition between the two relatively opposite choices of cost and safety.



## Organizational Structure of the IMO

The Assembly of the IMO consists of 174 Member States. In addition, there are three associate members and some observers to the Assembly (See London: IMO Publishing Service, 2016.) The three associate members are the Faroe Islands (the overseas dominion of the Kingdom of Denmark), Hong Kong, and Macao. The observers are usually inter-governmental organizations (IGOs) and non-governmental organizations (NGOs).

Under the Assembly is the Council that currently includes 40 participating member states. Further down the organizational structure are the five major committees, which are the Facilitation Committee, the Technical Cooperation Committee, the Legal Committee, the Maritime Safety Committee (MSC), and the Marine Environment Protection Committee (MEPC). The regulatory requirements stipulated by the MSC and MEPC, in particular, impact the operation of ships around the world directly.

The Maritime Safety Committee (MSC) is the highest technical agency of the IMO that takes charge primarily of aids to navigation, the ship's construction and equipment, safety manning, the collision regulations (COLREGs), dangerous cargo operation, safety of sea program and requirements, the fairways information, the ship's logbook and records, maritime casualty investigations, salvage and rescue, etc. The Marine Environment Protection Committee (MEPC), on the other hand, primarily governs the prevention and control of environmental pollution from ships around the world.

Underneath the Maritime Safety Committee (MSC) and the Marine Environment Protection Committee (MEPC) are seven secondary committees to take charge of, respectively, Ship's Design and Construction (SDC), Ship's System and Equipment (SSE), Human Element, Training and Watchkeeping (HTW), Navigation, Communication and Search and Rescue (NCSR), Carriage of Cargoes and Containers (CCC), Implementation of IMO Instruments (III), and Pollution Prevention and Response (PPR). Among them, PPR, as the name says, is the exclusive secondary committee within the jurisdiction of the MEPC.

## Promotion of Legislation

To promote legislation at the IMO, it has to involve a marine disaster or accident, re-deliberation of a case, or a technical proposal. The proposer is to submit the case to the headquarters where it will be sufficiently discussed and will only be included in a subsequent agenda once it is approved. After that is the preparation of a draft for the purpose of seeking ultimate adoption or approval. To introduce a new proposal or to revise an existing (mandatory) act, the proposer must also present to the IMO the urgency for the proposal to make a case, provide the true significance of the amendment, particularly whether there is far-reaching influence (meaning) or correlation with other amendments. This is likely to increase the operational cost for shipping and transportation businesses and even increase maximized explanations on the legal aspect and the administrative management aspect (responsibilities and obligations). The sinking of the Titanic in the North Atlantic Ocean in 1912 after striking an iceberg catalyzed the 1914 International Convention for the Safety of Life at Sea, for example.

The tonnage of more than 95% of ships around the world is governed by international conventions promulgated by the IMO, including the International Convention for the Safety of Life at Sea (SOLAS), the International Convention on Load Lines (LL), the International Convention for the Prevention of Pollution from Ships (MARPOL), the International Regulations for Preventing Collisions at Sea (COLREG), and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), etc.



The design, construction, equipment, maintenance and care of a ship and sailor capabilities in the maritime community are closely related to hundreds of the so-called codes, guidelines, and recommendations. Over fifty conventions and protocols have completed the legislative procedure. The implementation of statutory articles and conventions rely on port state control (PSC) and aim to maintain the global maritime level defined by the IMO. The control over flag states has to do with the Classification Society performing audits and inspections of ships of their affiliated states. Port state control, on the other hand, involves inspections on board of foreign ships coming into the port in order to make sure that a specific ship follows the requirements of applicable conventions of the IMO.

### Today's Issues

To date, there have quite a few challenges in maritime development around the world, including those that have been in existence over the long term or new ones that have been derived recently. There are still many issues pending joint efforts of the IMO and its member states, such as e-Navigation, which continues to be developed by the secondary committee on navigation, communication and search and rescue. The global maritime distress and safety system (GMDSS) has been examined. The latest system update project is vigorously ongoing. Temporary guidelines on ship security, network and information security, in particular, have been approved. The new criteria for the service and care of lifeboats and their casting equipment and systems have been adopted and will come into force in January 2020. The enhancement of the organizational convenience of the IMO is focused on the one-stop service that helps improve the flow of procedure for updating or revising various types of conventions and annexes. Regarding the issue of security and law and order over the sea, the IMO emphasized that it would focus on the implementation force and momentum in order to improve visibility of the organization (particularly in certain waters on which a high level of attention is focused).

### Pirates and Refugees

Countries have been working together over the past few years in waters known to the world for rampant piracy applying optimal resource management and the momentum built to combat pirates. In compliance with primarily the Djibouti Code of Conduct, specific efforts are focused on piracy appearing in the sea waters of Somalia. On the other hand, for Guinea on the other coastal area of Africa, where piracy has added to tension of those waters recently, inhibition of pirates, armed robbery against ships, and any illegal trading over the sea in Central and West Africa, among other issues, will all be regulated by the IMO and governed by any auxiliary action guidelines. Besides African waters, problematic waters are also found in the Strait of Malacca and its surroundings in Southeast Asia. The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) Information Sharing Center is currently responsible for counteracting various types of piracy and armed robbery in those waters.

Over the past few years, given the turmoil in the international situation, there are more than 19.5 million refugees globally. An unforeseen number of refugees arrive at the European coast (most of them remain in the shelters in the Middle East, Southeast Asia, and Africa). Refugees at sea have also become one of the priorities to be discussed at the IMO Assembly. International human smuggling syndicates place people on unsafe boats and concerns over inhumane treatment are triggered during transport. In 2015 alone, when the number of cases peaked, there were over one million refugees throughout the year attempting to arrive at Europe on the other side of the Mediterranean Sea because they wanted to escape wars and pursue a better life (See Amnesty Taiwan's "2015 Global Refugee Crisis Review: Monthly Chronicle"). The refugee crisis considered to be the most serious in modern history occurred in 2015. It puzzled the United Nations. And the IMO cannot ignore this sea-crossing behavior.



## Pollution from Ships and Energy Conservation

Annex I through VI of MARPOL address the range of issues between oil pollution caused by ships and waste possibly discharged by the ships. MARPOL aims primarily to prevent against operational and accidental pollution from ships.

Air pollution has become a global hazard over the years and has even invaded and impacted the daily life of the general public. Waste gas discharged by ships needs to be addressed by cooperative efforts. Annex VI of the latest version even calls for action against air pollution caused directly by ships. After the requirements over control of air pollution were adopted in MARPOL in 1997 and revised in 2008, strict control over several air pollution disputes continue. The sulfur content (with the original ceiling set at 3.5%) was decreased to 0.5% in 2016 (the global sulfur ceiling). The European Economic Area, in particular, took the lead to increase the sulfur content criterion to 0.1% in 2015. As for NO<sub>x</sub>, the standard limit for Tier III emissions was introduced and started to apply to new ships built in 2016 and onwards; the North American, Caribbean, and European Union waters were the first to enforce it.

In 2011, the IMO adopted the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP) (See London: IMO Publishing Service, 2013) and their enforcement was mandated starting in 2013. In other words, newly built ships in 2015 must save energy by up to 30% compared to those in the previous year. The numbers speak for themselves. A large trailer truck can generate around 50 g of carbon dioxide per ton-kilometer. A ship with a weight capacity of 2,000 to 8,000 tons generates around 21 g of carbon dioxide per ton-kilometer and one exceeding 8,000 tons around 15 g carbon dioxide per ton-kilometer. The carbon emissions per unit (ton-kilometer) appear to be declining. In aviation, a Boeing 747-400 jumbo jet emits around 540 g of carbon dioxide for every 1,200 kilometers flown. To answer to the challenge of enhancing energy efficiency, the official requirements of IMO are not enough. Ship designers, sailors, ship engineers, educators and trainers, ship operators, and managers are all responsible.

The 2009 Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships emphasizes environmental protection in the dismantlement of a ship and that it may be fulfilled by recycling for reuse of numerous elements and materials. Quite a few issues, however, point to the fact that ship dismantling workers are exposed to a highly dangerous environment, including the possibility of being exposed to various types of harmful substances. Therefore, the International Labour Organization (ILO) Basel Convention is in charge of controlling cross-border transfer of hazardous wastes. The IMO and the ILO hence play a shared role in supervising the recycling business and its workers.

## Summary

The IMO works to provide the world with approved criteria. The maritime community needs to define criteria that are applicable around the world. It is not to compromise with different parties globally or to discount on safety criteria. This organization plays the role of rendering high-standard, practical, and universally applicable regulatory requirements for ships under a procedural system consisting of international discussions and resolutions. When it comes to the highest standards and applicability to all ships, however, there are often challenges from ship owners and even contradictions in regulatory feasibility. Therefore, it is reiterated by the IMO that ship owners should not take shortcuts, play petty tricks, or unilaterally generalize standards without limits. It is worth encouraging for quite a few ship owners to apply higher ship criteria to their fleets. To sum up, the key, in fact, lies in “executive power.”



# IMO Global Integrated Shipping Information System

Compiled by Cheng-Chi Chung, Hsuan-Shih Lee (Professor, Dept. of Shipping and Transportation Management, National Taiwan Ocean University), Chun-Liang Wu, Chih-Yu Chen, Po-Yuan Huang, Meng-Chieh Liu (Master Degree Student, Dept. of Shipping and Transportation Management, National Taiwan Ocean University)

Key words: Global Integrated Shipping Information System (GISIS), International Maritime Organization (IMO)

This article introduces the 26 modules according to the Global Integrated Shipping Information System (GISIS) website (<http://gisis.imo.org>). It further introduces four modules in details, which includes the 'Cargoes,' 'Ballast Water Management,' 'Marine Casualties and Incidents,' and 'Global Maritime Distress and Safety System' modules.

**IMO** Global Integrated Shipping Information System

Welcome to the Public Area

Find module by keyword

- Ship and Company Particulars**  
Search the world fleet of ships by IMO Number and look up company particulars by IMO Company Number.
- Contact Points**  
Contact lists of competent authorities and authorized organizations relating to IMO matters.
- Marine Casualties and Incidents**  
Data on marine casualties and incidents, as defined by circulars MSC-MEPC.3/Circ.3.
- Pollution Prevention Equipment and Anti-fouling Systems**  
Equipment required by MARPOL 73/78 and the BWM Convention, and anti-fouling systems compliant with the AFS Convention.
- Piracy and Armed Robbery**  
Reported incidents of piracy and armed robbery.
- Non-mandatory Instruments**  
Comprehensive list of non-mandatory IMO instruments.
- Global SAR Plan**  
Information on the availability of Search and Rescue (SAR) Services.
- Cargoes**  
Information received from IMO members relating to containers, grain and solid bulk cargoes and dangerous goods in packaged form.
- National Maritime Legislation**  
Texts of national laws, orders, decrees, regulations and other instruments implementing IMO conventions.
- Ship Fuel Oil Consumption**  
Mandatory reporting of fuel oil consumption by ships.
- Evaluation of Hooks**  
Reports on evaluation of hooks according to the Guidelines for evaluation and replacement of lifeboat release and retrieval systems (MSC.1/Circ.1392).
- Member State Audits**  
Information on audits under the IMO Member State Audit Scheme.
- Ballast Water Management**  
Information on exemptions granted to ships, designated ballast water exchange areas, additional measures and warnings concerning ballast water uptakes.
- Maritime Security**  
Information communicated under the provisions of SOLAS regulation XI-2/13 (SOLAS chapter XI-2 and the ISPS Code).
- Recognized Organizations**  
Information submitted by Member States under MSC/Circ.1019-MEPC/Circ.382.
- Port Reception Facilities**  
Data on the available port reception facilities for the reception of ship-generated waste.
- Status of Treaties**  
Status of ratification of IMO conventions.
- Facilitation of International Maritime Traffic**  
Information on stowaway incidents, E-Addresses of Governmental Authorities and notifications pursuant to article VIII of the FAL Convention.
- Simulators**  
Information on simulators available for use in maritime training.
- Condition Assessment Scheme**  
Electronic database for the implementation of the Condition Assessment Scheme - Resolution MEPC.94 (46), as amended.
- GMDSS**  
Global Maritime Distress and Safety System (GMDSS).
- Test Laboratories and Halon Facilities**  
Test laboratories recognized by administrations and halon banking and reception facilities.
- MARPOL Annex VI**  
Notifications communicated under the provisions of MARPOL Annex VI (Regulations for the Prevention of Air Pollution from Ships).
- Survey and Certification**  
Specimen certificate and e-certificate, exemptions and equivalents, and voluntary early implementation.
- Ballast Water Chemicals**  
GESAMP-BWWG Database of chemicals most commonly associated with treated ballast water.
- Inter-agency platform for information sharing on migrant smuggling by sea**

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Global Integrated Shipping Information System (GISIS)

<https://gisis.imo.org/Public/Default.aspx>



The Global Integrated Shipping Information System (GISIS) is developed by the International Maritime Organization (IMO) Secretariat, based on information submitted by Maritime Administrations of Member States. Members are permitted to collect sets of data and store information in off-line databases from the IMO Secretariat to provide an access for Maritime Administrations to consult the information. This article contains 26 modules according to GISIS website (<https://gisis.imo.org>), to be compiled as following:

- I. **Ship and Company Particulars:** Users can obtain related information on ship and company particulars according to the Shipping Information Agreement between IHS (Information Handling Services) Maritime and the IMO Secretariat.
- II. **Contact Points:** This module contains contact lists of competent authorities and authorized organizations relating to IMO matters.
- III. **Marine Casualties and Incidents:** The casualty module contains two kind of information collected from ship casualties. The first category of information is made up of factual data collected from various sources while the second category of data is composed of more elaborated information based on the investigation reports of casualties received by IMO. It aims to identify overall trends or related issues concerned by the marine transportation.
- IV. **Pollution Prevention Equipment and Anti-fouling Systems:** The module contains pollution prevention equipment required by the International Convention for the Prevention of Pollution from ships (MARPOL), and ballast water management systems required by the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) that are approved under IMO MEPC's (Maritime Environmental Protection Committee) resolutions over the years, and anti-fouling systems compliant with the International Convention on the Control of Harmful Anti-fouling Systems in Ships (AFS) Convention.
- V. **Piracy and Armed Robbery:** The Secretariat receives information from Member States, reporting organizations, and entities, and promulgates reports about actual and attempted attacks by pirates and armed robbers against ships. Users are able to create and download customized reports by geographical area or time period.
- VI. **Non-mandatory Instruments:** The module contains an updated list of non-mandatory IMO instruments and the collection of information under implementation in order to achieve the following purposes: (1) enhance and update understanding of available non-mandatory instruments; (2) raise the awareness of voluntary implementation of non-mandatory instruments by Member States; (3) provide background material on domestic legislation; (4) assist in the identification of potential areas for technical co-operation.
- VII. **Global SAR Plan:** This module contains the Global SAR Plan provided by IMO Member States, including information on the availability of Search and Rescue (SAR) Services.
- VIII. **Cargoes:** This module provides information received by IMO members, relating to containers, grain and solid bulk cargoes and dangerous goods in packaged form.
- IX. **National Maritime Legislation:** This module provides texts of national laws, orders, decrees, regulations and other instruments implementing IMO conventions by the member states.
- X. **Ship Fuel Oil Consumption:** This module provides mandatory reporting of fuel oil consumption by ships.
- XI. **Evaluation of Hooks:** Evaluate hooks according to the Guidelines for Evaluation and Replacement of Lifeboat Release and Retrieval Systems (MSC.1/Circ1392).
- XII. **Member State Audits:** This module is a public platform for IMO Member State Audit Scheme as a tool for releasing audit reports to all Member States and the public.



- XIII. Ballast Water Management:** This module contains information required by the BWM Convention on exemptions granted to ships, designated ballast water exchange areas, additional measures and warnings concerning ballast water uptakes. In addition, the module provides other modules with the information required by the BWM Convention.
- XIV. Maritime Security:** Related information is communicated under the provisions of SOLAS Regulation XI-2/13 (SOLAS Chapter X1-2 and the International Ship and Port Facility Security Code (ISPS Code)).
- XV. Recognized Organizations:** Under the provisions of SOLAS 1974/1988 Regulation I/6, MARPOL Annex I Regulation 6, MARPOL Annex II Regulation 8, MARPOL Annex IV Regulation 4, MARPOL Annex VI Regulation 5, International Convention on Load Lines (LLC) 1966/1988 Article 13, International Convention on Tonnage Measurement of Ships (TONNAGE) 1969 Article 7, and AFS 2001 Annex 4 Regulation 1, the inspection and survey of ships shall be carried out by officers of competent authorities of Flag States. However, the competent authorities may entrust the inspections and surveys either to surveyors nominated or to organizations recognized by them.
- XVI. Port Reception Facilities:** This module contains information on the available port reception facilities for the reception of ship-generated waste, as provided by the competent authorities of the IMO Member States. It has been set up with the following objectives: (1) globally disseminate the current information on port reception facilities to the maritime community through the internet; (2) establish a web-based method for regular update of the information; (3) facilitate user-friendly searches through the database.
- XVII. Status of Treaties:** This module is about status of ratification of IMO conventions.
- XVIII. Facilitation of International Maritime Traffic:** This module provides information on stowaway incidents, e-Addresses of Governmental Authorities and notifications pursuant to Article VII of the Convention on Facilitation of International Maritime Traffic (FAL).
- XIX. Simulators:** This module provides information on simulators available for use in maritime training.
- XX. Condition Assessment Scheme:** This module offers electronic database for the amended implementation of the Condition Assessment Scheme - Resolution MEPC.94(46).
- XXI. GMDSS:** The Global Maritime Distress and Safety System (GMDSS) module is the technical, operational and administrative structure for maritime distress and safety communication worldwide.
- XXII. Test Laboratories and Halon Facilities:** This module contains test laboratories recognized by administrations, Halon banking, and reception facilities.
- XXIII. MARPOL Annex VI:** Notifications are sent under the provisions of MARPOL Annex VI (Regulations for the Prevention of Air Pollution from Ships).
- XXIV. Survey and Certification:** This module contains specimen certificate, e-certificate, exemptions and equivalents, and voluntary early implementation.
- XXV. Ballast Water Chemicals:** This module obtains information about 41 chemicals associated with treated ballast water from the literature on physicochemical, ecotoxicological and toxicological properties.
- XXVI. Inter-agency Platform for Information Sharing on Migrant Smuggling by Sea:** In order to deal with the safety of life at sea and search and rescue issues caused by unsafe migration by sea, IMO has worked with its partner organizations in the UN system as well as other international bodies to develop and update guidance for shipmasters and governments, and has established an information sharing platform.



In addition to the 26 modules above, the following focuses on “Cargoes,” “Ballast Water Management,” “Marine Casualties and Incidents,” “the Global Maritime Distress and Safety System,” and gives further explanation for practical functions.

### Cargoes Module

Cargoes module provides information received from IMO members relating to containers, grain and solid bulk cargoes and dangerous goods in packaged form. The related categories and descriptions are as follows:

- I. **BWM Convention exemptions:** inquire contact points for receiving applications for exemptions in accordance with Regulation A-4 of the BWM Convention.
- II. **Container safety:** inquire authorized organizations for container testing, inspection and approval under the International Convention for Safe Containers (CSC, 1972).
- III. **Continuous synopsis records:** inquire contact points for national continuous synopsis records (SOLAS Regulation XI-1/5).
- IV. **Facilitation purposes:** inquire designated offices of national authorities and international organizations for purposes.
- V. **IMDG Code:** inquire designated national competent authorities for matters relating to the carriage of dangerous goods in compliance with the IMDG Code.
- VI. **Ship inspection and casualty investigation services:** inquire Flag State contact points for Port State Control (PSC) matters, casualty investigation services and ships' inspection services.
- VII. **Solid bulk cargoes:** inquire designated national competent authorities responsible for safe carriage of grain and solid bulk cargoes.
- VIII. **Urgent reports on incidents involving harmful substances:** inquire national contact points responsible for receipt, transmission and processing of urgent reports on incidents involving harmful substances.
- IX. **Maritime security:** inquire recipients of maritime security-related communications.
- X. **Port reception facilities:** inquire national authorities responsible for handling reports on inadequacy of reception facilities.

### Ballast Water Management Module

As required by the BWM Convention, this module contains following information:

- I. **Exemptions granted to ships under Regulation A-4:** Users can search specific ship to obtain more relevant details and documents of exemption.
- II. **Ballast water exchange areas designated under Regulation B-4.2:** Users can search specific country to obtain the information of Ballast Water Exchange (BWE) area.
- III. **Additional measures under Regulation C-1:** This module includes the necessity and reasons for the adoption of additional measures, the provision of expected benefits and arrangements to promote ship compliance with the additional measures.
- IV. **Warnings concerning ballast water extraction in certain areas and related Flag State measures under Regulation C-2:** This module includes advice on ballast water extraction and arrangements for alternative supplies.

The BWM module provides other modules with the information required by the BWM Convention.



- I. **"Pollution Prevention Equipment and Anti-fouling Systems" module:** Approved ballast water management systems in accordance with Guidelines (G8) or the BWMS Code.
- II. **"Contact Points" module:** Contact points of applications for exemption based on Guidelines (G7).
- III. **"Port Reception Facilities" module:** Availability of reception facilities for ballast water and sediments and alleged inadequacies related to sediment reception facilities according to Article 5 and 14.
- IV. **"Recognized Organizations" module:** Responsibilities and requirements of the authority delegated to nominated surveyors or recognized organizations based on Regulation E-1.
- V. **"Ballast Water Chemical" module:** GESAMP-BWWG (Group of Experts on the Scientific Aspects of Marine Environmental Protection - Ballast Water Working Group) and database of chemicals most associated with ballast water.

The casualty module contains two kinds of information. The first category of information is actual data collected from various sources while the second category is based on the casualty investigation reports received from IMO, completed investigation reports analyzed by IMO, or appended reports under MSC-MEPC.3/Circ.3. It aims to identify overall trends or related issues concerned by the marine transportation.

For the purpose of collecting information on ship casualties, IMO divides them into "very serious casualties", "serious casualties", "less serious casualties" and "marine incidents". "Very serious casualties" refer to ships including total loss of the ship, loss of life, or severe pollution. "Serious casualties" indicate to ships happening to fire, explosion, collision, grounding, contact, heavy weather damage, ice damage, hull cracking, or suspected hull defect, etc. "Less serious casualties" include hazardous incidents and near misses.

For the basic search, users can get information by submitting one of the basic data, such as the incident reference code, ship name, IMO number, flag administration, type of casualty, incident date or coastal administration. For the advanced search, they have to input detailed information of categories.

## GMDSS Module

The Global Maritime Distress and Safety System (GMDSS) is the technical, operational and administrative structure for maritime distress and safety communications worldwide. It regulates the radio communication equipment carried by ships, how to maintain and use the equipment, and when governments should establish appropriate shore-based facilities to support GMDSS communication. The module is divided into following 13 sections.

- I. Status of facilities.
- II. Sea Area A1 (within range of shore-based VHF DSC coverage).
- III. Sea Area A2 (within range of shore-based MF DSC coverage).
- IV. Sea Areas A3 and A4 (outside sea area A2).
- V. International Maritime Satellite Organization (Inmarsat) facilities.
- VI. Rescue Coordination Centers (RCCs) using Inmarsat Ship Earth Stations (SESS).
- VII. NAVTEX (Navigation Telex) service.
- VIII. International SafetyNET service.
- IX. HF Narrow Band Direct Printing (NBDP) MSI (Maritime Safety Information) Broadcast Service.
- X. Cospas-Sarsat, Mission Control Center (MCC) and Local User Terminals (LUT).
- XI. Emergency Position Indicating Radio Beacon (EPIRB) registration data.
- XII. Contact points of GMDSS.
- XIII. Navigational Areas/Metropolitan Area (NAVAREA/METAREA) coordinators.

The module provides maps showing approximate coverage areas of shore-based facilities of the GMDSS. When changes occur, Member States can review and update information directly, and users can confirm whether these facilities are in "operational, trial, planned or undetermined" state. To search for a specific target, users can use filters to seek efficiently. It also provides information of NAVAREA and METAREA coordinators, which can be used to contact relevant personnel.



# Overview of the International Convention for the Prevention of Pollution from Ships of the International Maritime Organization

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Translated by Linguitronics

Keyword: IMO, MARPOL, ECA

The International Maritime Organization formulated the International Convention for the Prevention of Pollution from Ships 1973 (MARPOL 1973) in order to prevent and significantly reduce pollution from ships. Its six technical annexes include strict regulations on the discharge of pollutants, and it is also the goal that Taiwan should obey to move towards sustainable oceans.

## Introduction

IMO was formerly known as the Inter-Governmental Maritime Consultative Organization (IMCO), which was established in March 1958. It became one of 15 specialized organs under the United Nations in 1959. In May 1982, the ninth General Assembly decided to change its name to the International Maritime Organization, with the headquarters in London, UK. This international organization is responsible for urging collaboration among governments and the shipping sectors in respective countries for the purpose of improving marine safety, preventing marine pollution, and boosting maritime technical cooperation. Its current member states include the 169 members of the United Nations and the Cook Islands. There are additional affiliations, including the Faroe Islands, Hong Kong, and Macao.

## MARPOL Convention Overview

By means of international collaboration, the United Kingdom invited in April 1954 representatives from 32 countries to approve the International Convention for the Prevention of Pollution of the Sea by Oil 1954 (OILPOL 1954). In March 1967, the Liberian tanker Torrey Canyon hit rocks due to erroneous judgment while cruising close to the coast of the Seven Stone Reef in the northwest of the United Kingdom, causing a major oil spill in the ocean. As such, in 1969, the International Convention Relating to Intervention on the High Sea in Cases of Oil Pollution Casualties 1969 (INTERVENTION 1969) was enacted.

The International Intergovernmental Maritime Advisory Organization called for the international conference on marine pollution in London 1973. MARPOL 1973 was approved in the meeting. On February 6, 1978, the International Conference on Tankers Safety and Pollution Prevention was called; in the meeting, the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution From Ships 1973 (MARPOL 73/78) was approved and took effect on October 2, 1983. In 1997, a protocol was approved to revise the Convention, and Annex 6 was added. The Provision took effect on May 19, 2005.

## MARPOL Content

The Convention includes laws and regulations that aim to prevent and reduce pollution from ships to the maximum extent possible, including accidental and routine pollution. It currently has six technical annexes and most of them include special regions where strict control is applied over operational emissions.



**Annex I. Prevention of Pollution by Oil (entered into force on October 2, 1983)**

Covers prevention of pollution by oil from operational measures as well as from accidental discharges; the 1992 amendments to Annex I made it mandatory for new oil tankers to have double hulls and brought in a phase-in schedule for existing tankers to fit double hulls, which was subsequently revised in 2001 and 2003.

**Annex II. Carriage of noxious liquid substances in bulk (entered into force on October 2, 1983)**

Details the discharge criteria and measures for the control of pollution by noxious liquid substances carried in bulk; some 250 substances were evaluated and included in the list appended to the Convention; the discharge of residues is allowed only to reception facilities until certain concentrations and conditions (which vary with the category of substances) are complied with. In any case, no discharge of residues containing noxious substances is permitted within 12 miles of the nearest land.

**Annex III. Chemicals carried in packaged form Ships (entered into force on July 1, 1992)**

Contains general requirements for the issuing of detailed standards on packing, marking, labeling, documentation, stowage, quantity limitations, exceptions, and notifications. For the purpose of this Annex, "harmful substances" are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code) or which meet the criteria in Annex III.

**Annex IV. Prevention of Pollution by Sewage from Ships (entered into force on September 27, 2003)**

Contains requirements to control pollution of the sea by sewage; the discharge of sewage into the sea is prohibited, except when the ship has in operation an approved sewage treatment plant or when the ship is discharging comminuted and disinfected sewage at a distance of more than three nautical miles from the nearest land; sewage which is not comminuted or disinfected has to be discharged at a distance of more than twelve nautical miles from the nearest land.

**Annex V. Prevention of Pollution by Garbage from Ships (entered into force on December 31, 1988)**

Deals with different types of garbage and specifies the distances from land and the manner in which they may be disposed of; the most important feature of the Annex is the complete ban imposed on the disposal into the sea of all forms of plastics.

**Annex VI. Prevention of Air Pollution from Ships (entered into force May 19, 2005)**

Sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances; designated emission control areas set more stringent standards for SO<sub>x</sub>, NO<sub>x</sub>, and particulate matter. A chapter adopted in 2011 covers mandatory technical and operational energy efficiency measures aimed at reducing greenhouse gas emissions from ships.

## Emission Control Area

According to the regulations in Annex VI, there are two discharge and fuel quality requirements: (1) Global requirements and (2) requirements applicable to the emission control area, known as the ECA. Emission control areas are designated as SO<sub>x</sub> and PM or NO<sub>x</sub>, or all three types of emissions for ships; nevertheless, proposals from the signatories in Annex VI have to be followed.

Current IMO's emission control areas include the following. See Figure (P.25):

- Baltic Sea
- North Sea
- North America ECA, including most coasts of the United States and Canada
- US Caribbean ECA, including Puerto Rico and the Virgin Islands of the United States



## I. NOx Emission Criteria

The NOx emission limit in Article 13 of MARPOL Annex VI is applicable to marine diesel engines installed on a ship with an output power exceeding 130 kW per engine, with two exceptions: Engines used only in emergency and those on ships that cruise only within the waters of the country of their nationality. The NOx emission limit of a diesel engine depends on the maximum operating rotational speed of the engine (n is rpm) as is shown in Table 1. Tier I and Tier II are the overall limits while Tier III is applicable to NOx emission control areas only.

Table 1. NOx emission limit in MARPOL Annex VI

Stage	Date of implementation	Nox limit (g / kWh)		
		n < 130	130 ≤ n < 2000	n ≥ 2000
Tier I	Year of 2000	17.0	$45 \cdot n^{-0.2}$	9.8
Tier II	Year of 2011	14.4	$44 \cdot n^{0.23}$	7.7
Tier III*	Year of 2016†	3.4	$9 \cdot n^{-0.2}$	1.96

Remarks: \* For NOx emission control areas only. For the other areas, the Stage 2 emission criteria continue to apply.

Source/ <https://www.dieselnet.com/standards/inter/imo.php>

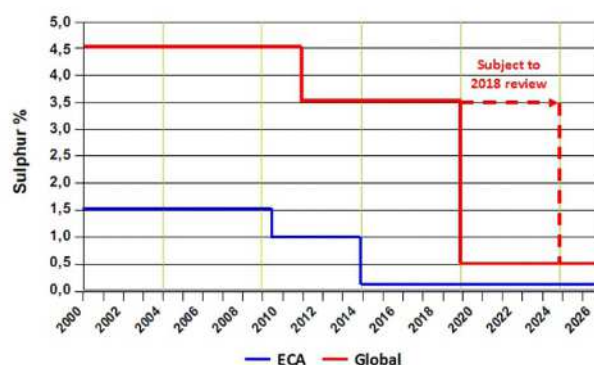
## II. Sulfur content in the fuel

Annex VI regulates the ceiling sulfur content in fuels and this is used as the means to control SOx emissions and indirectly control PM emissions. For SOx ECAs (SECAs), there are special requirements for the quality of fuels. Sulfur limits and the implementation dates are shown in Table 2 and Figure 2.

Table 2. Sulfur limits in fuels in MARPOL Annex VI

Date	Sulfur limit in fuels ( %m / m )	
	SECA	Global
Year of 2000	1.5%	4.5%
July 2010	1.0%	
Year of 2012		3.5%
Year of 2015	0.1%	
Year of 2020		0.5%

Source/ <https://www.dieselnet.com/standards/inter/imo.php>



Sulfur content limit trends

[https://www.kittiwake.com/emission\\_control\\_areas](https://www.kittiwake.com/emission_control_areas)

## Conclusion

Taiwan is surrounded by the sea, and the ocean is the economic lifeline and source of Taiwan's economy. In order to maintain the sustainable survival and life of Taiwan, Taiwan is obliged to abide by the international conventions' responsibility for protecting the marine environment and has no right to renounce or recommend.



# 國際海洋資訊

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